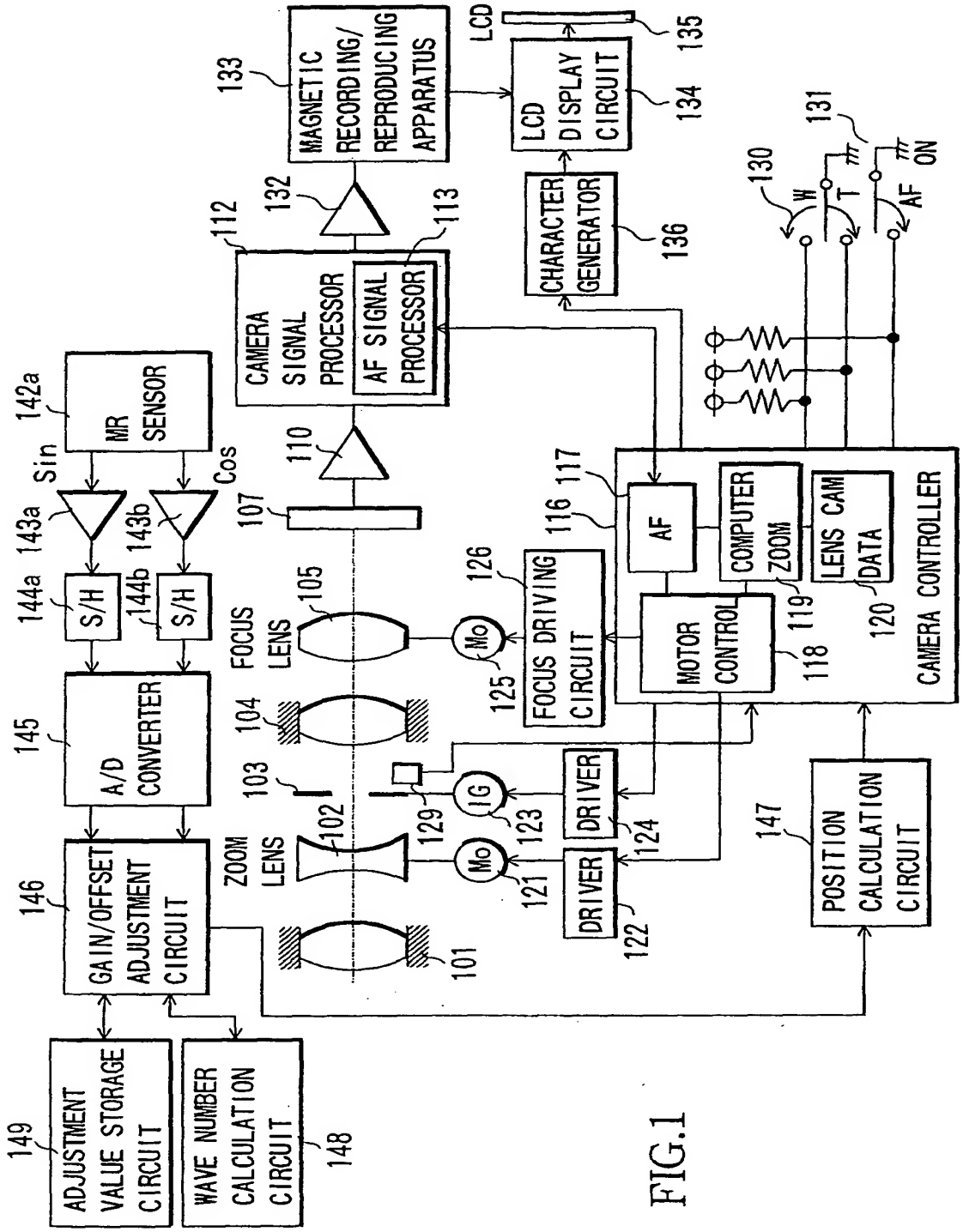

MAGNETIC RECORDING/ REPRODUCING APPARATUS
133
LCD
LCD DISPLAY CIRCUIT
134
135
CHARACTER GENERATOR
136
CAMERA SIGNAL PROCESSOR
AF SIGNAL PROCESSOR
112
113
132
110
107
MR SENSOR
142a
Sin
Cos
143a
143b
144a
144b
S/H
S/H
A/D CONVERTER
145
GAIN/OFFSET ADJUSTMENT CIRCUIT
146
ADJUSTMENT VALUE STORAGE CIRCUIT
149
WAVE NUMBER CALCULATION CIRCUIT
148
FOCUS LENS
105
ZOOM LENS
104
103
102
101
Mo
126
125
FOCUS DRIVING CIRCUIT
IG
129
123
DRIVER
124
Mo
121
DRIVER
122
116
117
AF
COMPUTER ZOOM
LENS CAM DATA
MOTOR CONTROL
118
119
120
CAMERA CONTROLLER
POSITION CALCULATION CIRCUIT
147
130
W
T
131
AF
ON

FIG.1

FIG.2 (A)

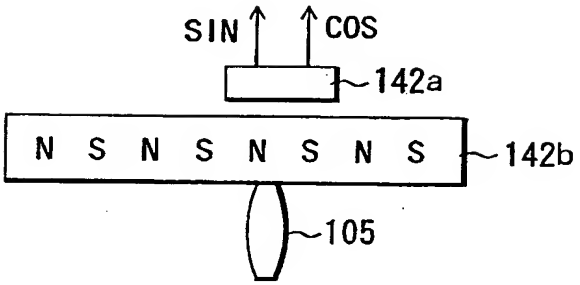

SIN
COS
142a
N S N S N S N S
142b
105

FIG.2 (B)

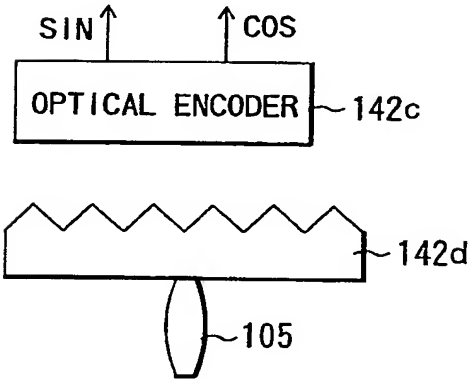

SIN
COS
OPTICAL ENCODER
142c
142d
105

FIG.3

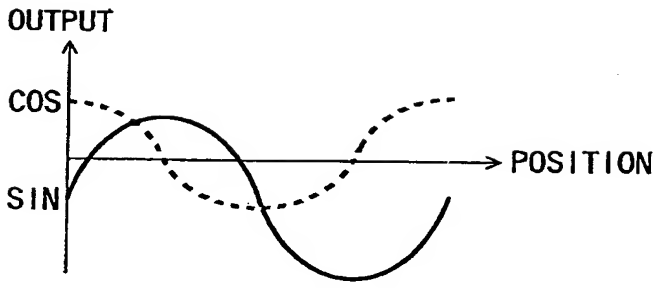


FIG.4

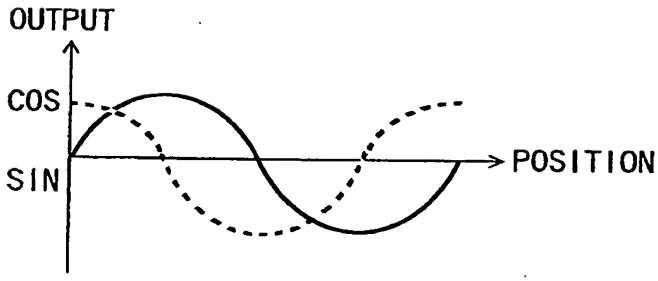


FIG.5

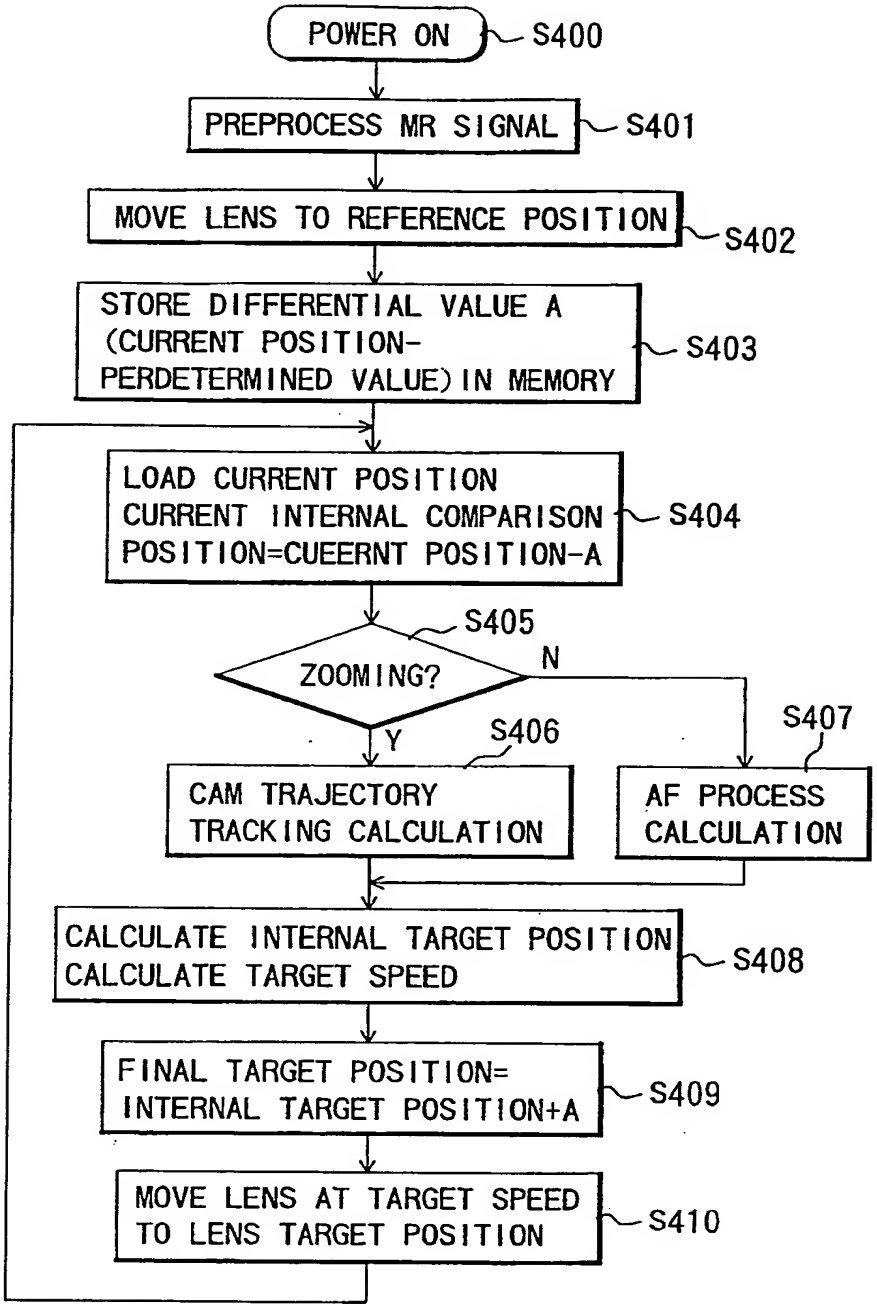

POWER ON
S400
PREPROCESS MR SIGNAL
S401
MOVE LENS TO REFERENCE POSITION
S402
STORE DIFFERENTIAL VALUE A (CURRENT POSITION-PERDETERMINED VALUE) IN MEMORY
S403
LOAD CURRENT POSITION CURRENT INTERNAL COMPARISON POSITION=CUEERNT POSITION-A
S404
S405
ZOOMING?
N
Y
S406
S407
CAM TRAJECTORY TRACKING CALCULATION
AF PROCESS CALCULATION
CALCULATE INTERNAL TARGET POSITION CALCULATE TARGET SPEED
S408
FINAL TARGET POSITION= INTERNAL TARGET POSITION+A
S409
MOVE LENS AT TARGET SPEED TO LENS TARGET POSITION
S410

FIG.6

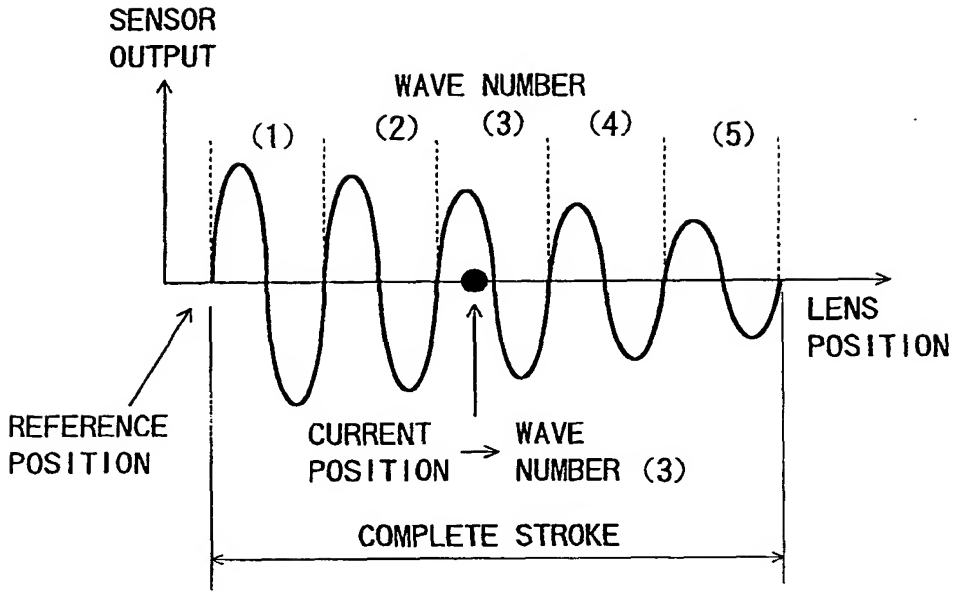

SENSOR
OUTPUT
WAVE NUMBER
(1)
(2)
(3)
(4)
(5)
LENS
POSITION
REFERENCE
POSITION
CURRENT
POSITION
WAVE
NUMBER (3)
COMPLETE STROKE

FIG.7 (A)

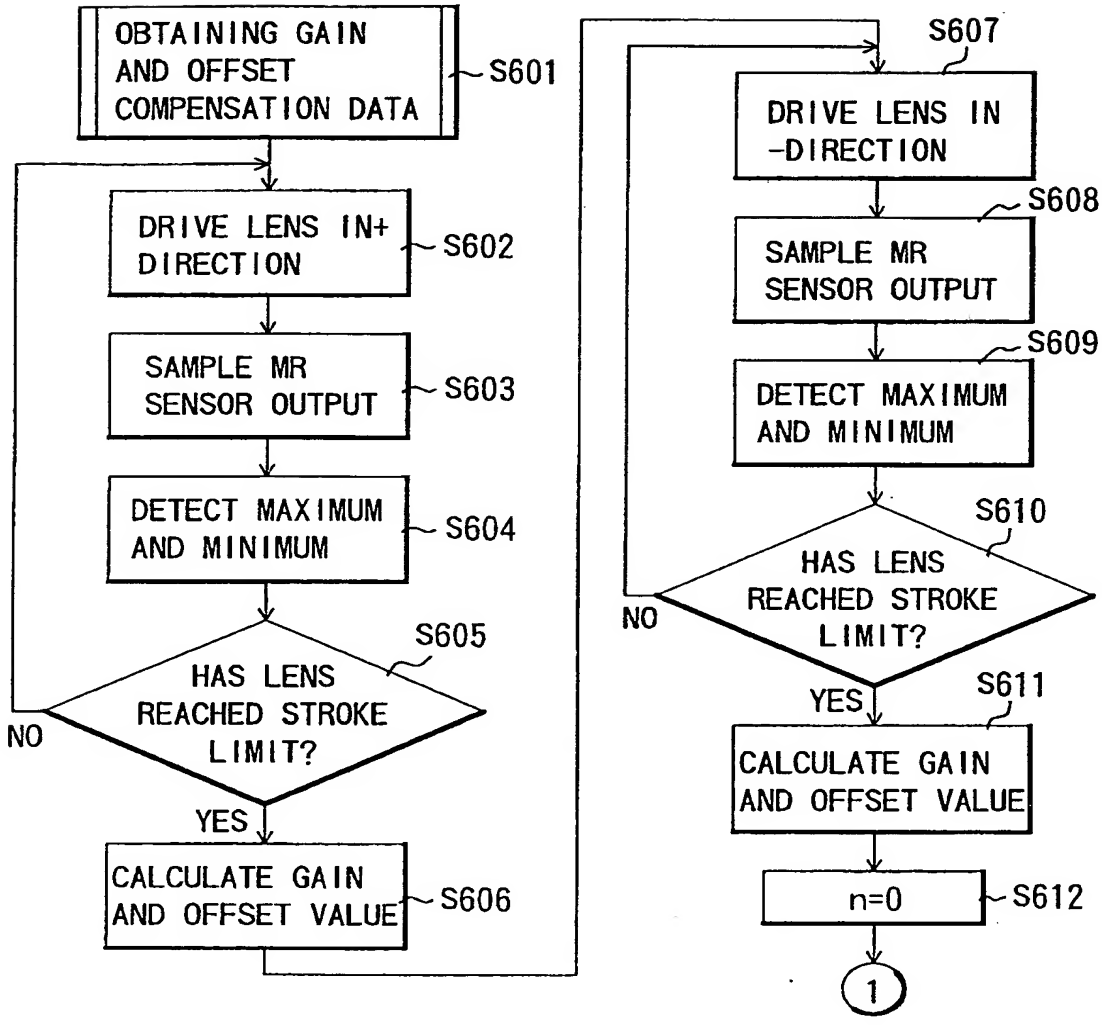

OBTAINING GAIN AND OFFSET COMPENSATION DATA
S601
DRIVE LENS IN+ DIRECTION
S602
SAMPLE MR SENSOR OUTPUT
S603
DETECT MAXIMUM AND MINIMUM
S604
HAS LENS REACHED STROKE LIMIT?
S605
NO
YES
CALCULATE GAIN AND OFFSET VALUE
S606
S607
DRIVE LENS IN -DIRECTION
S608
SAMPLE MR SENSOR OUTPUT
S609
DETECT MAXIMUM AND MINIMUM
S610
HAS LENS REACHED STROKE LIMIT?
NO
YES
S611
CALCULATE GAIN AND OFFSET VALUE
n=0
S612
1

FIG.7 (B)

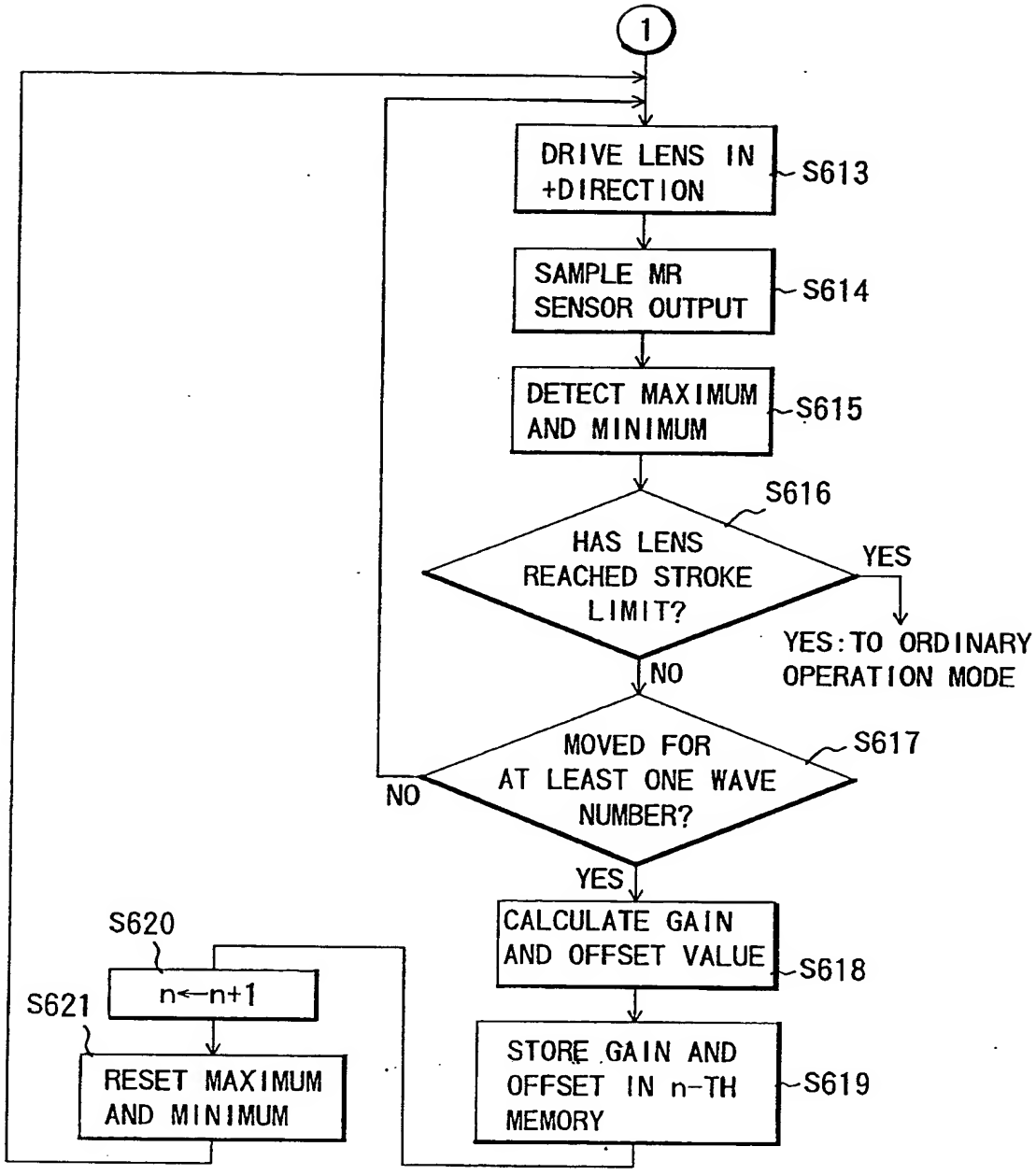

1
DRIVE LENS IN +DIRECTION
S613
SAMPLE MR SENSOR OUTPUT
S614
DETECT MAXIMUM AND MINIMUM
S615
S616
HAS LENS REACHED STROKE LIMIT?
YES
YES:TO ORDINARY OPERATION MODE
NO
MOVED FOR AT LEAST ONE WAVE NUMBER?
S617
NO
YES
CALCULATE GAIN AND OFFSET VALUE
S618
STORE GAIN AND OFFSET IN n-TH MEMORY
S619
S620
n←n+1
S621
RESET MAXIMUM AND MINIMUM

FIG.8

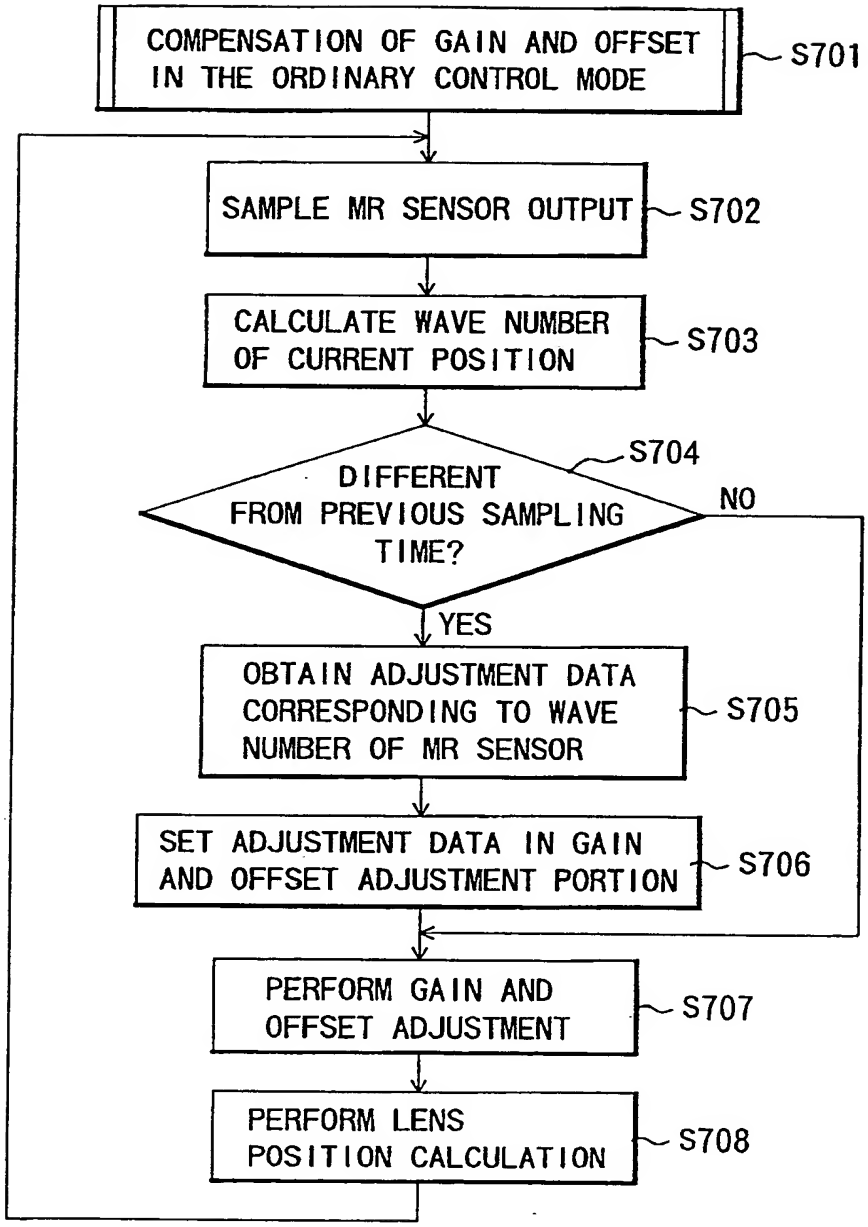

COMPENSATION OF GAIN AND OFFSET IN THE ORDINARY CONTROL MODE
S701
SAMPLE MR SENSOR OUTPUT
S702
CALCULATE WAVE NUMBER OF CURRENT POSITION
S703
DIFFERENT FROM PREVIOUS SAMPLING TIME?
S704
NO
YES
OBTAIN ADJUSTMENT DATA CORRESPONDING TO WAVE NUMBER OF MR SENSOR
S705
SET ADJUSTMENT DATA IN GAIN AND OFFSET ADJUSTMENT PORTION
S706
PERFORM GAIN AND OFFSET ADJUSTMENT
S707
PERFORM LENS POSITION CALCULATION
S708

FIG.9 (PRIOR ART)

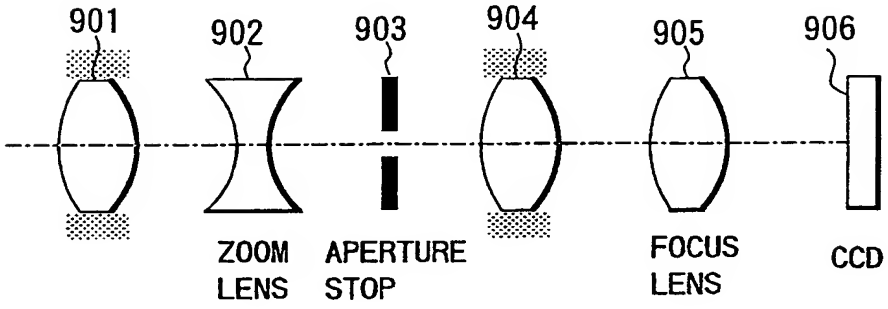


FIG.10 (PRIOR ART)

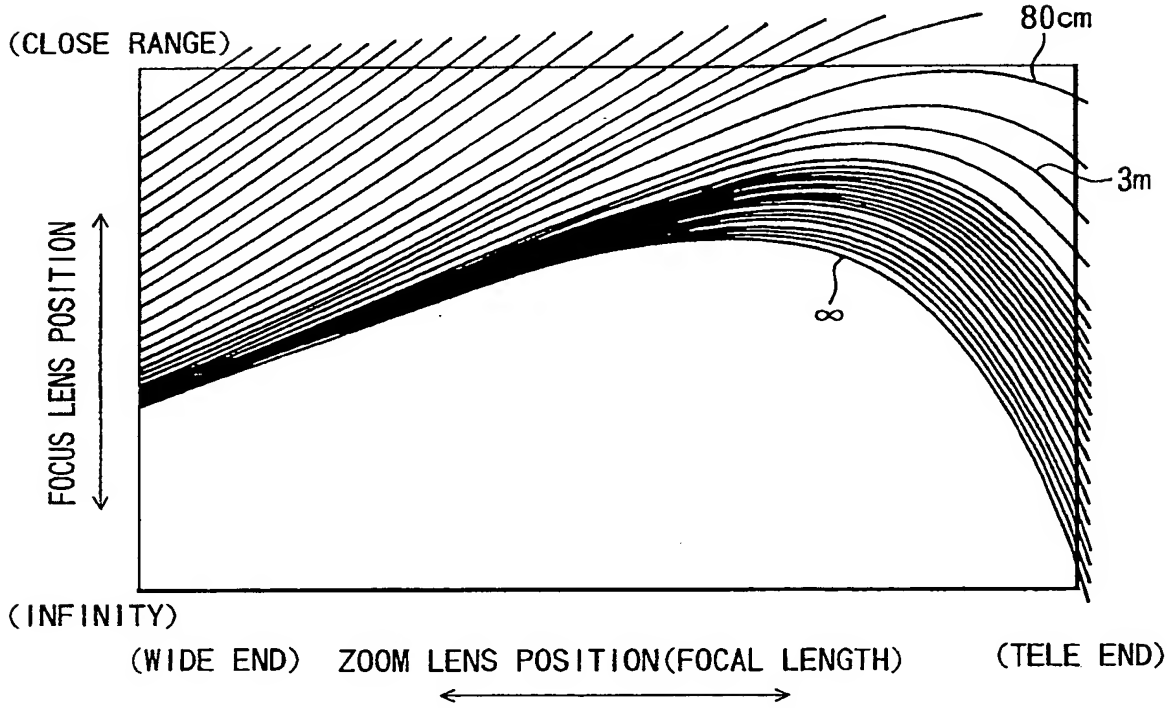


FIG.11
(PRIOR ART)

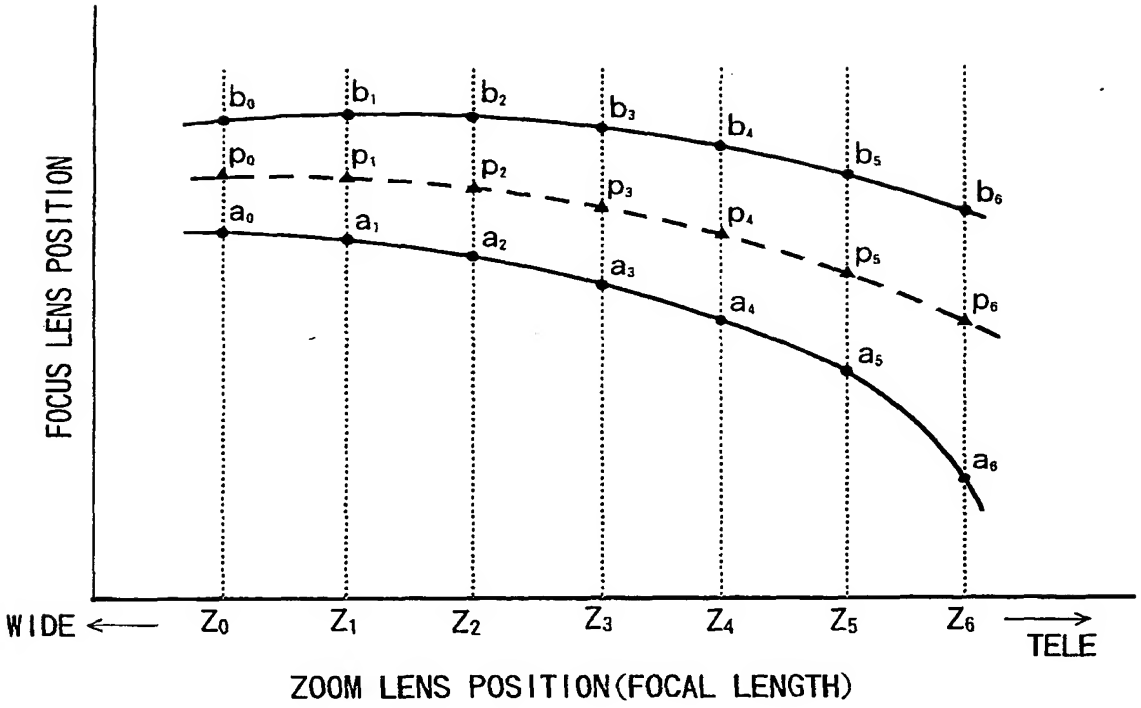
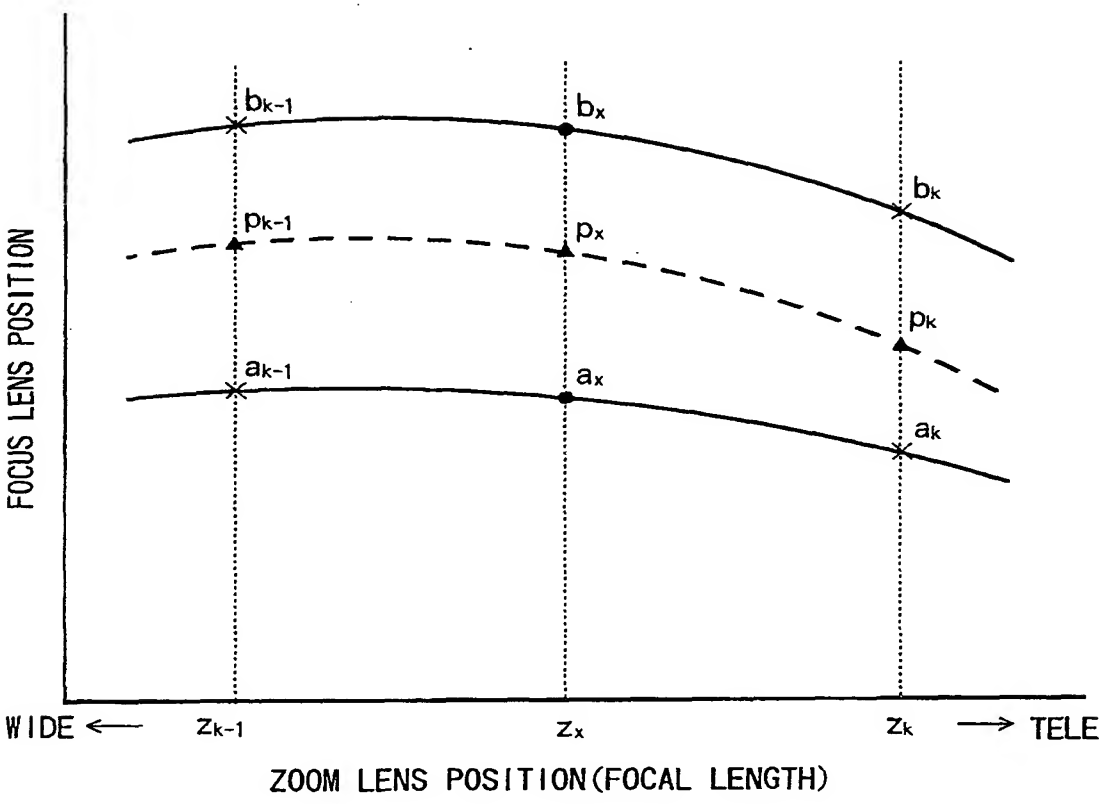


FIG.12
(PRIOR ART)



$$a_x = a_k - \frac{(z_k - z_x)(a_k - a_{k-1})}{(z_k - z_{k-1})}$$

$$b_x = b_k - \frac{(z_k - z_x)(b_k - b_{k-1})}{(z_k - z_{k-1})}$$

FIG.13
(PRIOR ART)

FOCUS LENS POSITION

∞ ⟷ CLOSE RANGE

A(n, v)

ZOOM LENS POSITION: WIDE ↑ TELE

v \ n	0	1	2	3	----	k	----	m
0	A00	A10	A20	A30	----	Ak0	----	Am0
1	A01	A11	A21	A31	----	Ak1	----	Am1
2	A02	A12	A22	A32	----	Ak2	----	Am2
3	A03	A13	A23	A33	----	Ak3	----	Am3
⋮	⋮	⋮	⋮	⋮		⋮		⋮
k	A0k	A1k	A2k	A3k	----	Akk	----	Amk
⋮	⋮	⋮	⋮	⋮		⋮		⋮
s	A0s	A1s	A2s	A3s	----	Aks	----	Ams

FIG.14 (PRIOR ART)

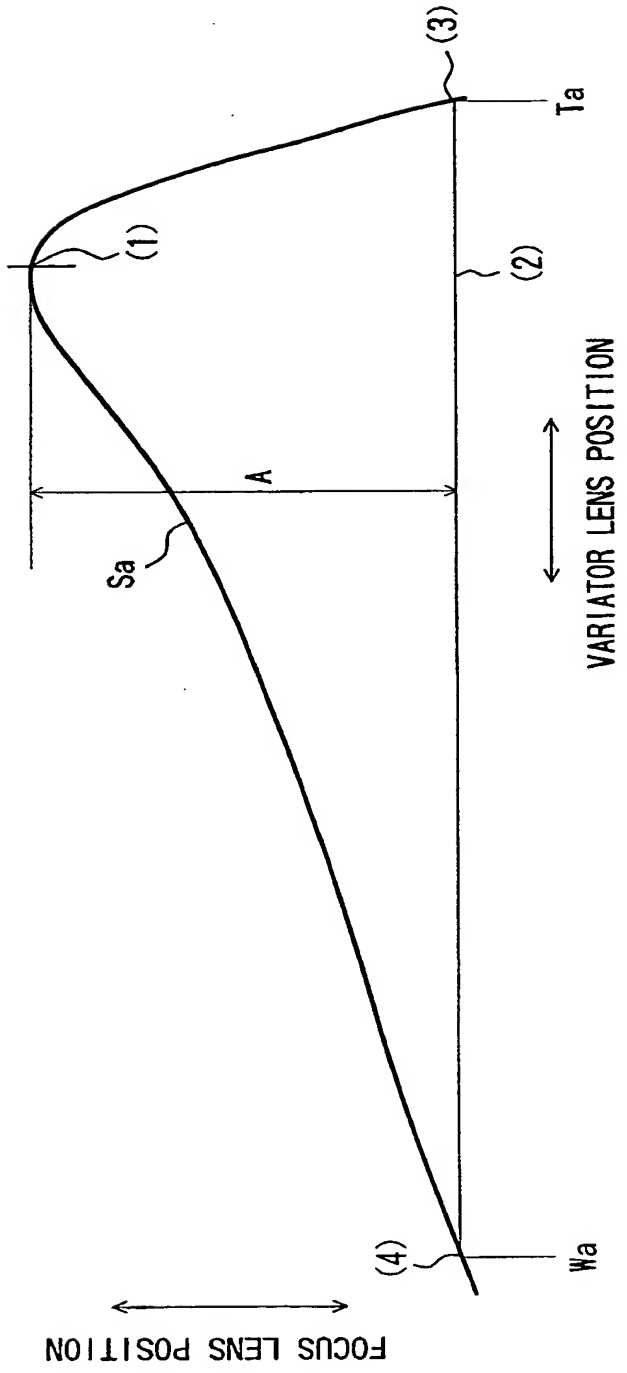


FIG.15
(PRIOR ART)